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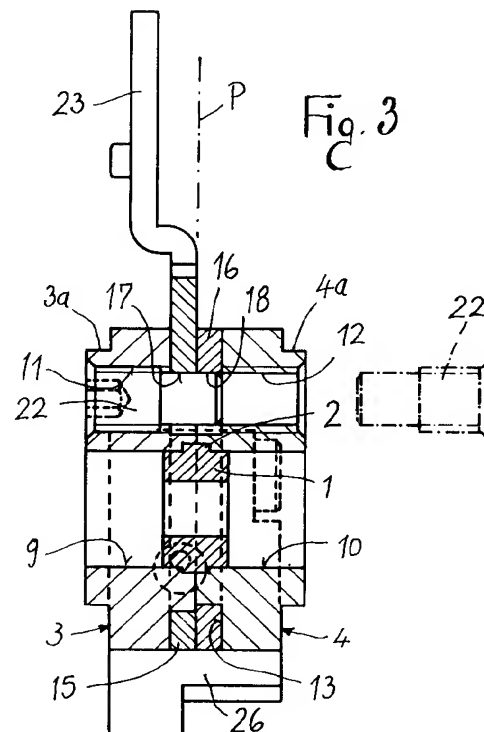
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(54) **Device for adapting a panic-safe lock to the opening direction of a door, for presetting the lock to open only from one side, and for temporarily allowing to open it from the opposite side.**

(57) A device for adapting a panic-safe lock to the opening direction of a door, for presetting the lock to open only from one side and for temporarily allowing to open it from the opposite side, comprising a pair of annular elements (3,4) rotatably supportable in the lock and having coaxial polygonal seats (9,10) for the side-fitting engagement of a respective handle, and threaded engagement holes (11,12) parallel to the axis of the seats, the annular elements being able to rotate in contrast with elastic means from a fixed abutment position, a lever (15,16) which is pivoted between the annular elements coaxially thereto and has a slot (17,18) alignable with the threaded holes and in which a screw (22) is inserted, the screw being screwed into one of the threaded holes and having such a length as to rotationally couple the lever (15,16) and the annular element in which the screw has been screwed, the other annular element being free, the lever having a first arm (23) for the actuation of the spring latch, a second arm (20) for the simultaneous actuation of the bolt, and a pawl (26) actuatable by means of the tumbler of a key-operated device and suitable to engage teeth of the annular elements to provide a rotational coupling between the lever and the annular elements.



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The present invention relates to a device for adapting a panic-safe lock to the opening direction of a door, for presetting the lock to open only from one side, and for temporarily allowing to open it from the opposite side.

Conventional panic-safe locks provided with a latch and a bolt that can be moved into their release position by actuating a handle are installed in emergency doors. With these locks, in case of emergency the door can be opened only from the inside outward.

However, the need arises to install these locks in emergency doors that open to the right or to the left and to temporarily open the door from the outside as well.

The technical aim of the present invention is to provide a device which, when installed in a panic-safe lock, allows to open the door from one side and, only with an appropriate actuation, from the opposite side.

Within the scope of this aim, an object of the present invention is to provide a device which is constructively simple, highly reliable in operation and easy to modify according to the rightward or leftward opening characteristics of the door.

The invention provides a device for adapting a panic-safe lock to the opening direction of a door, for presetting the lock to open only from one side and for temporarily allowing to open it from the opposite side, comprising a pair of annular elements rotatably supportable in the lock and having coaxial polygonal seats for the side-fitting engagement of a respective handle, and threaded coaxial holes parallel to the axis of said seats, said annular elements being able to rotate in contrast with elastic means from a fixed abutment position, a lever which is pivoted between said annular elements coaxially thereto and has a slot alignable with said threaded holes and in which a screw is inserted, said screw being screwed into one of said threaded holes and having such a length as to rotationally couple said lever and the annular element in which said screw has been screwed, the other annular element being free, said lever having a first arm for the actuation of the spring latch, a second arm for the simultaneous actuation of the bolt, and a pawl actuable by means of the tumbler of a key-operated device and suitable to engage teeth of said annular elements to provide a rotational coupling between said lever and said annular elements.

Further particularities of the present invention will become apparent from the following description of a preferred embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a view of the device;

figure 2 is an enlarged-scale view of the device;

figure 3 is a sectional view, taken along the plane III-III of figure 2;

figure 4 is an exploded view of the device; and

figure 5 is a view of the lever alone.

5 With reference to the above figures, the device comprises a bush 1 having a peripheral collar 2 on which two annular elements 3 and 4 are centered on opposite sides; said elements are substantially mirror images of each other and make mutual  
10 contact at the centerline plane P.

The annular elements 3 and 4, termed simply "rings" hereinafter for brevity, have on their outer faces respective raised portions 3a, 4a by means of which they are rotatably supportable in openings of the side walls of a lock case. Each one of the rings 3 and 4 has two teeth 5, 6 and 7, 8 that lie diagonally opposite with respect to the bush 1, a central seat 9, 10 and a threaded hole 11, 12. The central seats 9, 10 are coaxial to the bush 1 and have a square cross-section which is complementary to the cross-sections of the tangs of lock  
15 actuation handles.

The holes 11, 12 are located outside the seats 9, 10, and the raised portions 3a, 4a are conveniently expanded radially at said holes so as to engage in recesses of the lock case openings which rotatably support the rings 3, 4. The angular extension of these recesses determines the rotation angle of the rings 3, 4. The teeth 5, 7 have notches for the insertion of rods subjected to the action of springs (see figure 1) that react against shoulders of the case and bias the rings 3, 4 in abutment in a clearly set angular position. A seat 13 is formed between the rings 3, 4, which accommodates a lever, generally designated by the reference numeral 14 and shown in greater detail in figure 5.  
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The lever 14 comprises two rings 15, 16 which are internally provided with two respective slots 17, 18 alignable with the holes 11, 12. The slot 18 is located in a wing 19 of the ring 16 that extends outward. The ring 16 forms a tooth-shaped arm 20, with a front 21, in a position that lies diametrically opposite the wing 19.  
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The rings 15, 16 can be alternately coupled to the ring 3 or to the ring 4 by means of a screw 22 inserted in the hole 11 or 12.  
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The length of the screw 22 is such that when it has been fully screwed into the hole 11 or 12 of an annular element 3 or 4, its end engages both slots 17, 18 of the rings 15, 16 but not the hole of the opposite annular element, which is thus free to rotate. Figure 3 shows that the screw 22 produces the rotational coupling between the element 3 and the rings 15, 16, whereas the element 4 is free.  
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The ring 15 of the lever 14 has an arm 23 extending radially opposite the tooth 20, and a tab 24 in which a pawl 26 is articulated by means of a pivot 25. A pin 27 arranged substantially radially to  
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the bush 1 is guided in the pawl 26 and has a collar 28 on which a spring 29 acts, said spring being accommodated in a seat 30 formed in the pawl around the pin 27.

The spring 29 pushes the pin 27 against the edge of the ring 15, so that the pawl 26 is constantly biased in a position in which a tooth 31, formed therein, is out of the path of the teeth 6, 8 of the annular elements or rings 3, 4.

The described device is installed in a lock so that the lever 23 can act directly on the spring latch 32 and the tooth 20 can act on the bolt 33 by means of an interposed lever 34 which rests on the front 21 with one end and acts on the tang of the bolt with its opposite end. The tumbler of a key-operated cylinder 36 can also act, by means of an interposed lever 35, on the pawl 26.

Assuming that the device is to be installed so that the ring 3 is on the inner side of the door, the inner ring is connected to the lever 14 by means of the screw 22. In this manner the outer ring 4 is free. Therefore, by actuating in a clockwise direction the inner handle that engages the seat 9, the latch and the bolt will retract simultaneously. However, any rotation of the outer handle has no effect, since there is no rotational connection between the lever 14 and the ring 4. In this situation, in order to open the door from the outside, by means of the cylinder 36, the pawl 26 is moved adjacent to the rings 3, 4, causing the the tooth 31 to engage the teeth 6, 8, so that the rotation of the outer ring 4 can be transmitted to the levers 14, rotates said lever and actuates the latch so that it opens.

As can be seen, the invention perfectly achieves the intended aim and object.

Particularly, by shifting the screw 22 from one hole 11 to the other one 12 it is possible to modify the lock in order to make it usable in right-opening or left-opening doors.

Numerous modifications and variations, all within the scope of the inventive concept, are possible in the practical embodiment of the invention. Particularly, the lever 14 can be formed monolithically.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

## Claims

1. Device for adapting a panic-safe lock to the opening direction of a door, for presetting said lock to open only from one side and for tem-

porarily allowing to open it from the opposite side, characterized in that it comprises a pair of annular elements (3, 4) rotatably supportable in the lock and having coaxial polygonal seats (9, 10) for the side-fitting engagement of a respective handle, and threaded coaxial holes (11, 12) parallel to the axis of said seats, said annular elements (3, 4) being able to rotate in contrast with elastic means from a fixed abutment position, a lever (14) which is pivoted between said annular elements (3, 4) coaxially thereto and has a slot (17, 18) alignable with said threaded holes (11, 12) and in which a screw (22) is inserted, said screw being screwed into one of said threaded holes (11, 12) and having such a length as to rotationally couple said lever (14) and the annular element (3, 4) in which said screw has been screwed, the other annular element being free, said lever (14) having a first arm (23) for the actuation of the spring latch (32), a second arm (20) for the simultaneous actuation of the bolt (33), and a pawl (26) actuatable by means of the tumbler of a key-operated device (36) and suitable to engage teeth (6, 8) of said annular elements (3, 4) to provide a rotational coupling between said lever (14) and said annular elements (3, 4).

2. Device according to claim 1, characterized in that said lever (14) is constituted by a pair of adjacent rings (15, 16), one of which (15) is provided with said first arm (23) for the actuation of the spring latch (32) and the other one (16) is provided with said second arm (20) for the actuation of the bolt (33), slots (17, 18) for the engagement of said screw being formed in said rings (15, 16).
3. Device according to claim 2, characterized in that said annular elements (3, 4) are rotatably supported on a bush (1) and form a seat (13) in which said rings (15, 16) are accommodated, the arms of said rings forming said lever (14).
4. Device according to claim 2 or 3, characterized in that said ring (15) provided with said first arm (23) has a tab (24) which is co-planar thereto and in which said pawl (26) is articulated, a pin (27) being guided in said pawl (26), a spring (29) acting on said pin, pushing it against the edge of said ring (15) and keeping a tooth (31), formed on said pawl (26), disengaged from corresponding teeth (6, 8) of the annular elements (3, 4), said pawl (26) being actuatable by the tumbler of a key-operated device (36) installed in the lock so as

to move said teeth (6, 8 and 31) so that they mutually mesh and rotationally couple said free annular element (3 or 4) to said lever (14).

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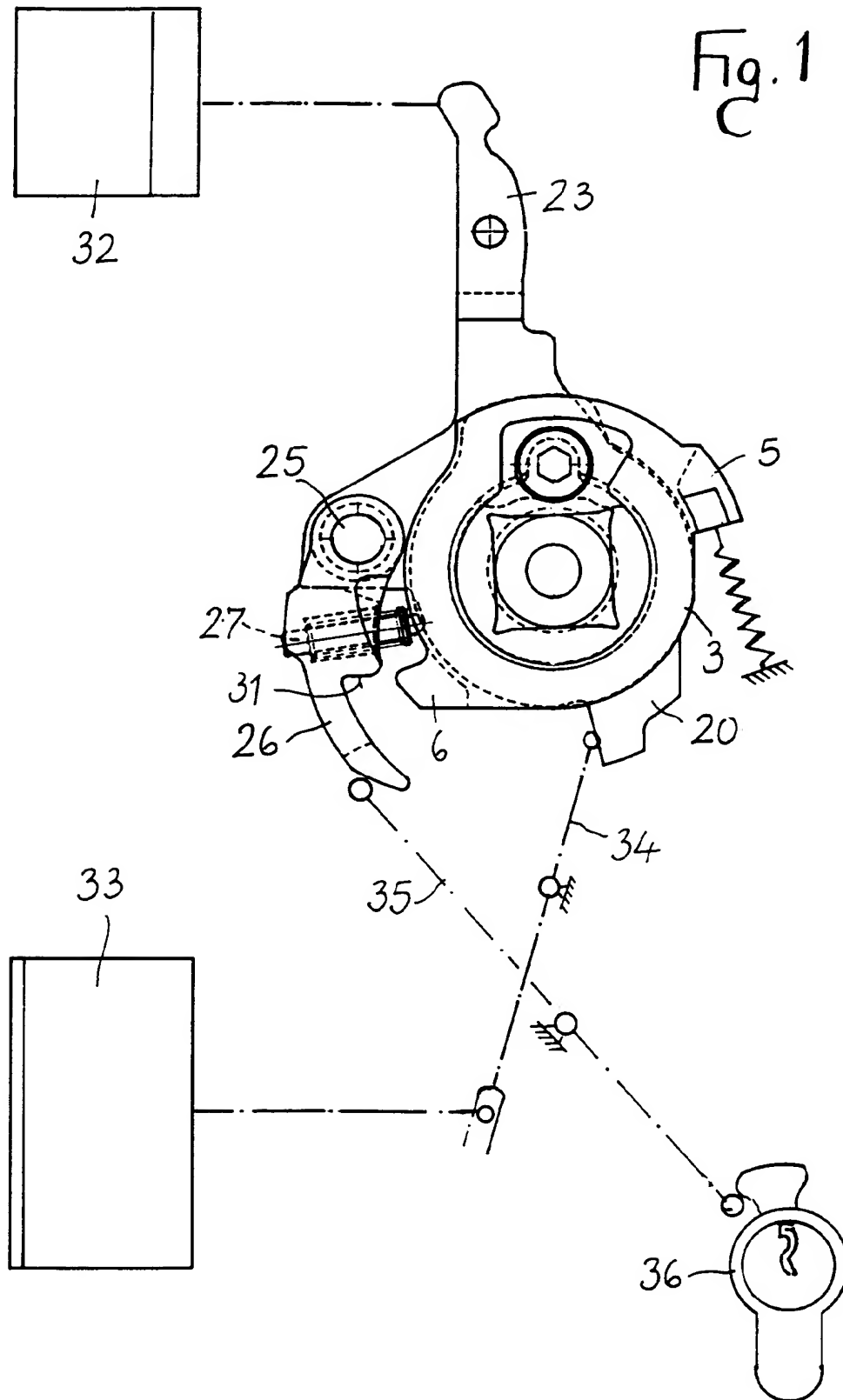
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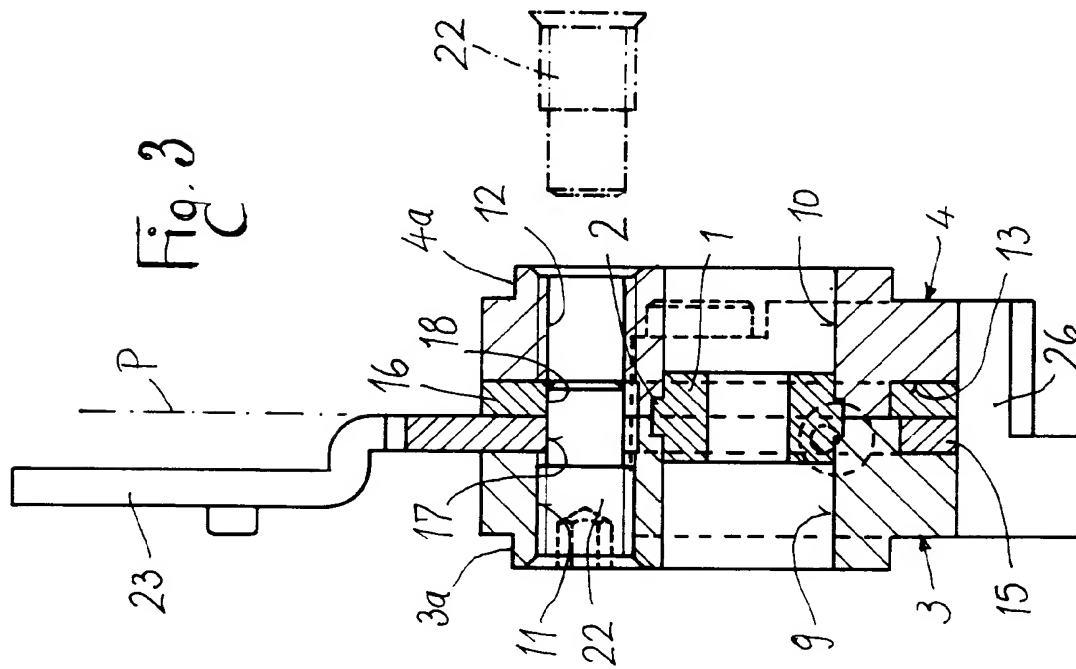
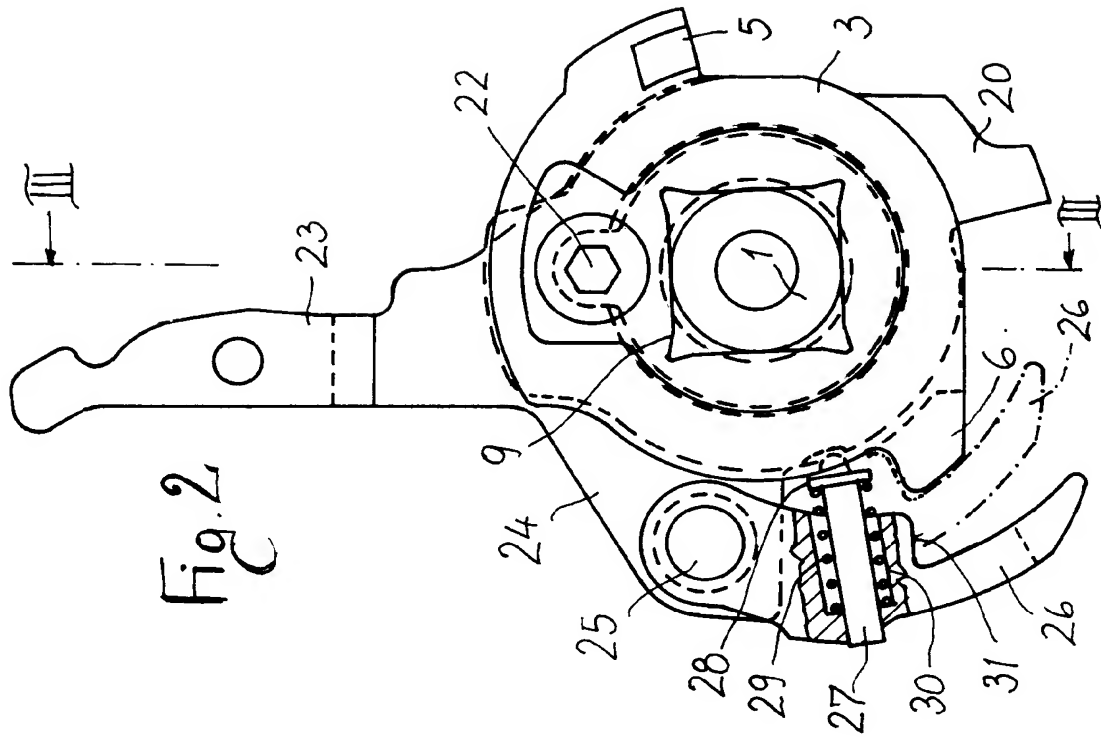
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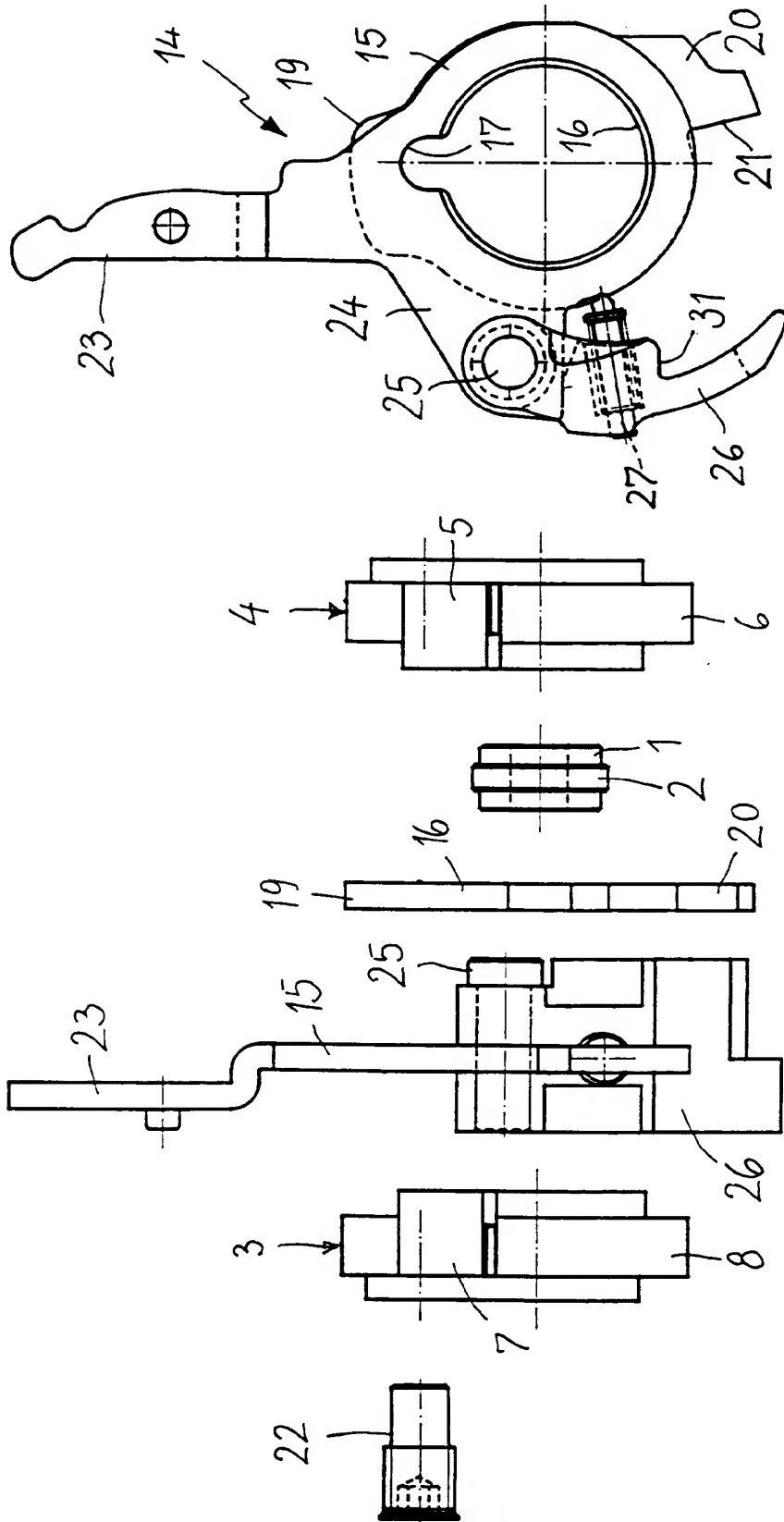


Fig. 5

Fig. 4



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## EUROPEAN SEARCH REPORT

Application Number  
EP 94 10 4426

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	US-A-1 578 483 (TEICH) * page 1, line 50 - page 2, line 69; figures * ---	1-3	E05B63/04 E05B65/10 E05B59/00
A	FR-A-2 234 443 (GKN - STENMAN AB) * page 3, line 27 - page 5, line 22; figures * ---	1-3	
A	DE-A-23 61 307 (EATON GMBH) * page 3, line 17 - page 5, line 9 * * page 5, line 24 - page 7, line 12 * * page 8, line 11 - page 9, line 18; figures 1-3 * ---	1,2,4	
A	US-A-4 011 741 (NOLIN) * column 2, line 47 - column 3, line 65; figures 1-3 * ---	1,2,4	
A	GB-A-2 225 373 (ELZETT-CERTA ZARGYARTÓ) * page 3, line 13 - page 4, line 9 * * page 11, line 3 - page 12, line 19 * * page 15, line 5 - line 12; figures 1,2 * -----	1,2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			E05B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30 June 1994	Examiner Henkes, R
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document  T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			